

PATENT ABSTRACTS OF JAPAN

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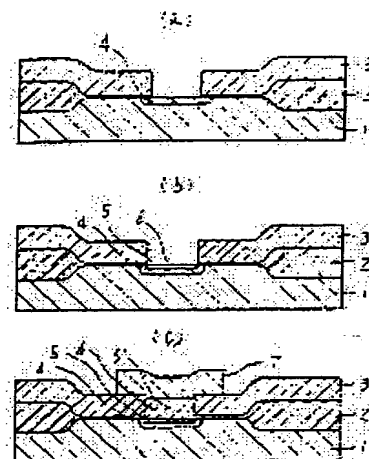
(21) Application number : 62-220144 (71) Applicant : HITACHI LTD
(22) Date of filing : 04.09.1987 (72) Inventor : KOBAYASHI NOBUYOSHI
SAITO MASAYOSHI
SUZUKI MASAYASU

(54) MANUFACTURE OF SEMICONDUCTOR DEVICE

(57) Abstract:

PURPOSE: To completely fill a contact hole with W by forming a tungsten silicide or tungsten/tungsten silicide film on an Si by a reaction of WF₆ with the Si at the initial of the reaction, and then growing a W film by H₂ reducing reaction of the WF₆ thereon.

CONSTITUTION: A phosphorus glass film 3 is deposited on a thermal oxide film 2 on a P-type silicon crystalline substrate 1. Then, after 1 contact hole is formed at the film 3, As ions are implanted, and heated to form an N⁺ type high concentration diffused layer 4 in the contact hole. A tungsten film 6/tungsten silicide film 5 are formed by a low pressure CVD method with WF₆ and N₂ on the contact. Thereafter, a tungsten film 6' is further grown on the contact by a low pressure CVD method with the WF₆ and H₂. Subsequently, aluminum electrodes 7 are formed. Similar result can be obtained by employing a CVD oxide film silicon nitride, BPSG, SOG, etc., instead of the film 3.



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TI - MANUFACTURE OF SEMICONDUCTOR DEVICE
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PA - HITACHI LTD
IC - H01L21/285

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TI - Tungsten electrode burying method - by CVD of tungsten
hexa:fluoride to form deposited tungsten using reaction with
hydrogen NoAbstract Dwg 2/2
PR - JP19870220144 19870904
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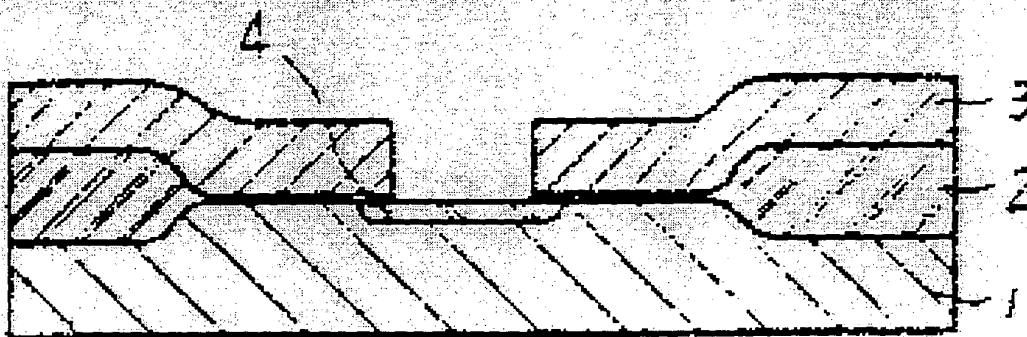
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AP - JP19870220144 19870904
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PA - HITACHI LTD
TI - MANUFACTURE OF SEMICONDUCTOR DEVICE
AB - PURPOSE:To completely fill a contact hole with W by forming a
tungsten silicide or tungsten/tungsten silicide film on an Si by a
reaction of WF6 with the Si at the initial of the reaction, and then
growing a W film by H2 reducing reaction of the WF6 thereon.
- CONSTITUTION:A phosphorus glass film3 is deposited on a
thermal oxide film2 on a P-type silicon crystalline substrate 1.
Then, after 1 contact hole is formed at the film 3, As ions are
implanted, and heated to form an N<+> type high concentration
diffused layer 4 in the contact hole. A tungsten film 6/tungsten
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and N2 on the contact. Thereafter, a tungsten film 6' is further
grown on the contact by a low pressure CVD method with the WF6

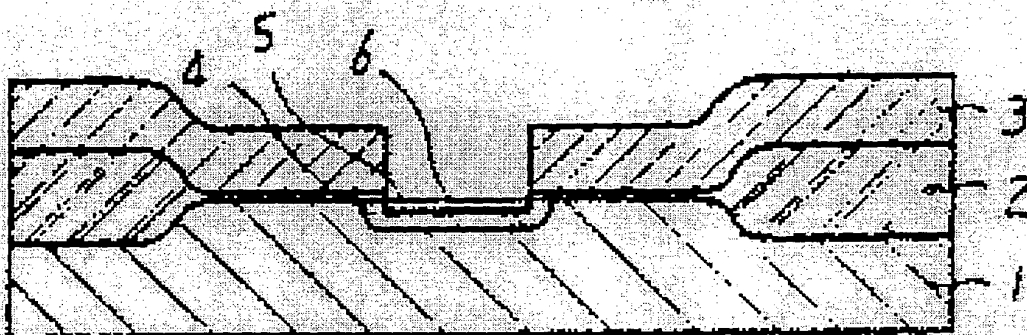
and H₂. Subsequently, aluminum electrodes 7 are formed. Similar result can be obtained by employing a CVD oxide film silicon nitride, BPSG, SOG, etc., instead of the film 3.

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(a)



(b)



(c)

